BYCATCH

Wasting ALASKA'S *Future*

SECOND EDITION

Alaska Marine Conservation Council

BYCATCH: Wasting Alaska's Future (SECOND EDITION)

September 2004

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Alaska Marine Conservation Council

AMCC is a community-based organization of people working to protect the health and diversity of Alaska's marine ecosystem. Our members are fishermen, subsistence harvesters, marine scientists, conservationists, small business owners and families. AMCC works to minimize bycatch, protect habitat, prevent overfishing and promote clean community-based fishing opportunities.

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Unless otherwise noted, bycatch statistics in this report are based on "Discards in the North Pacific Groundfish Fisheries" 2001, 2002, and 2003, prepared for AMCC by Fisheries Information Services, using National Marine Fisheries Service data. These discard reports are available on AMCC's website: http://www.akmarine.org/publications.

"Discards in the Groundfish Fisheries of the Bering Sea/ Aleutian Islands & the Gulf of Alaska 1998-2000," is available on the Alaska Department of Fish and Game Commercial Fisheries website: http://www.cf.adfg.state.ak.us/geninfo/pubs/pubshome.php.

Cover photo: A northern rockfish finds cover among the living seafloor habitat off the Aleutian Islands. High levels of rockfish bycatch and the waste of sensitive habitat forming organisms such as corals and sponges are problems that fishery managers need to resolve.
Photo: R. Stone, NOAA Fisheries

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What We Can Do

Introduction

In Alaska's waters, hundreds of millions of pounds of unwanted fish and other marine life are thrown back into the sea dead or dying as a result of wasteful fishing practices. Marine life is wasted when it's the wrong species, sex or size. Although in recent years the overall rate of observed bycatch in the North Pacific has decreased, the problem remains chronic and ecological consequences are coming to light.

More scrutiny is needed to address today's bycatch problems. This edition of Bycatch: Wasting Alaska's Future provides recent statistics and describes the direct link between wasteful fishing practices and habitat destruction. We offer a progress report and review of problem fisheries. Lastly, we invite you to help promote conservation guidelines and improved solutions.

Photo: NOAA Fisheries Archives

WHAT IS "BYCATCH"?

The term bycatch refers to the discarded catch of any marine life and the unobserved mortality due to a direct encounter with fishing gear. Sometimes the term bycatch is used differently in different arenas. Generally, the Magnuson-Stevens Act (MSA) definition of bycatch is used:

"The term 'bycatch' means fish which are harvested in a fishery, but which are not sold or kept for personal use, and includes economic discards and regulatory discards." 16.U.S.C. §1802(2) "The term 'fish' means finfish, mollusks, crustaceans, and all other forms of marine animal and plant life other than marine mammals and birds." 16.U.S.C. §1802(12)

Fishery observers collect scientific data on board commercial vessels. The data they collect is an integral part of fishery management and conservation.
Photo: NOAA Fisheries Archives

The MSA definition of bycatch excludes retained incidental catch. However, excluding all retained incidental catch from the definition of bycatch can be misleading in certain cases. Take for example, the 1998 implementation of full retention and utilization of juvenile pollock and cod. Under the MSA definition, since these fish are now retained, there is no juvenile pollock and cod bycatch and therefore there is no bycatch problem in those fisheries (NPFMC 2004). Actions should be taken to avoid the catch of juvenile fish, not simply increase their retention.

Sablefish. Photo: B. Barss, ODFW/ NOAA N.W. Fisheries Science Center

GROUNDFISH

The following are the "groundfish" species included in the Bering Sea/ Aleutian Islands and Gulf of Alaska fishery management plans. Some of these species are managed as a single stock and others are managed as assemblages with harvest quotas set for the group.

Pollock
Pacific cod
Atka mackerel
Sablefish
Rockfish
Flatfish
- **rock sole**
- **yellowfin sole**
- **Greenland turbot**
- **arrowtooth flounder**
- **flathead sole**
- **rex sole**
- **Dover sole**
- **starry flounder**
- **English sole**
- **butter sole**
- **Alaska plaice**
- **sand sole**
- **deep-sea sole**

Other species
- **squid**
- **sculpin**
- **skate**
- **shark**
- **octopi**

Types of Bycatch

The excessive volume of bycatch in North Pacific fisheries is primarily a consequence of modern, large-scale fishing operations driven by economic incentives to catch as much fish as possible, as quickly as possible. Vessels out to catch particular groundfish species throw back fish and other marine life that are too small, the wrong sex, or the wrong species.

Economic Discards: These are fish of an undesirable size (such as juvenile fish, too small for the processing machinery), sex (for example, males in the rock sole roe fishery), quality, or species. Most fishermen keep only the fish worthy of limited cargo space aboard their vessels.

Species with No Commercial Value: These are species such as sharks, coral, sea stars, sponges, anemones, and other marine life, which are important in the marine food web or form living habitat for other species.

Regulatory Discards: These are fish that must be discarded because the total allowable catch has been reached or because some other regulatory mechanism is in place.

Prohibited Species: These include crab, halibut, herring, and salmon, which are illegal to retain in groundfish fisheries because they are the catch for other fishermen.

All fisheries and types of gear have some level of bycatch. At one end of the spectrum is jig gear, the most selective, which deploys single hooks targeting one fish at a time. At the other end of the spectrum is bottom trawling, which is the most indiscriminate and destructive, with large nets and chains that are dragged across the seafloor.

Lost pot, longline and trawl gear can continue to catch fish or entangle marine mammals and birds. This bycatch from "ghost fishing" is not accounted for. Managers have implemented effective measures to eliminate ghost fishing by lost pots by requiring them to have biodegradable escape panels.

2003 BYCATCH INDEX

Pounds of groundfish wasted in the North Pacific fisheries in 2003: 304 million

Number of F150 pick-up trucks that could be filled to maximum carrying capacity with all the 2003 groundfish waste: 178,930

Pounds of halibut wasted in the North Pacific groundfish fisheries in 2003: 13 million

Dockside value of the wasted halibut (assuming a price of $3 per pound): $39 million

Number of salmon intercepted by trawl fisheries in the Gulf of Alaska and Bering Sea in 2003: 266,923

Percent increase in salmon bycatch from 2002 to 2003: 102%

Status and Trends

In 1996, Congress enacted the Magnuson-Stevens Fishery Conservation and Management Act requiring measures to minimize bycatch by avoiding unwanted catch. These measures were brought about by a call to action from many fishermen, communities, politicians and conservationists, to end the excessive waste of marine life. In 1993, Senator Frank Murkowski stated, "Fish discards have achieved a level of overall waste in commercial fisheries that is absolutely appalling. In a world where millions of people are starving, this is a disgrace of unparalleled proportions" (Bernton 1993). After the passage of the Act, Senator Ted Stevens said, "We have passed a bill to try to eliminate waste in the fisheries off our shores. If these mechanisms we have adopted through compromise do not work, I intend to be back with a stronger bill. The waste has become unacceptable, totally unacceptable" (Congressional Record 1996).

So what's changed since then? Overall, discards in North Pacific fisheries have declined approximately 50% since 1996. Although this decline represents a great improvement, there remains each year hundreds of millions of pounds of fish wasted off the coast of Alaska. Measures to minimize bycatch in some of the most indiscriminant fisheries have been postponed and questions remain about the actual success of some programs that have been implemented. Additionally, management measures have not minimized the bycatch of habitat forming species such as corals, sponges and sea whips.

	1998	1999	2000	2001	2002	2003
Total Groundfish Catch (mt)	1,774,489	1,527,219	1,672,261	1,831,197	1,924,256	1,970,496
Total Groundfish Discards (mt)	149,606	148,946	150,576	118,647	135,952	137,976
Groundfish Discards (pounds)	329,822,000	328,368,000	331,961,000	261,568,000	299,720,000	304,182,000
Percent Groundfish Discarded	8.4%	9.8%	9.0%	6.5%	7.1%	7.1%
	Prohibited Species (in addition to groundfish discards above)					
Halibut Mortality (pounds)	14,087,000	14,414,000	13,558,000	13,673,000	13,688,000	13,051,000
Herring (pounds)	1,797,000	1,989,000	1,137,000	608,000	308,000	2,444,000
Chinook Salmon (numbers)	70,000	43,492	33,825	53,055	50,433	67,867
Other Salmon (numbers)	81,580	53,792	68,532	63,380	81,772	199,291
Red King Crab (numbers)	49,191	94,022	115,682	80,909	133,832	105,509
Other King Crab (numbers)	43,220	61,879	36,914	36,284	62,477	151,438
Bairdi Tanner Crab (numbers)	1,643,587	996,764	1,254,100	1,258,219	1,404,762	1,223,117
Other Tanner Crab (numbers)	4,633,578	1,604,354	3,314,970	2,043,627	1,501,745	787,832

Table 1. *Groundfish catch, discard rates and total discards for all Alaska groundfish fisheries combined (metric tons [mt], pounds and numbers of individuals). Not included in these statistics are the thousands of pounds of invertebrates such as coral and sponge, plus many non-commercial fishes not considered "groundfish" by fishery managers.*

The following figures show the most wasteful fisheries by target species and gear type in the Bering Sea and Aleutian Islands, and Gulf of Alaska. They are based on the 2003 fishery and were chosen because of their high rates of discards relative to the total catch (percentage of catch), high volumes of discards, or both. Discards include all groundfish species but do not include prohibited species (i.e. herring, salmon, crab and halibut), coral and sponge, or other marine life.

Figure 1. Most Wasteful Fisheries in the Bering Sea and Aleutian Islands (2003)

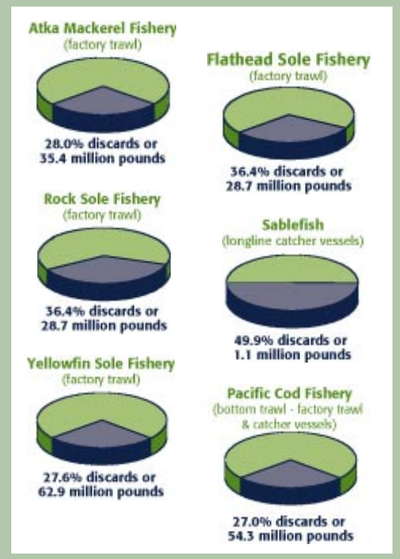
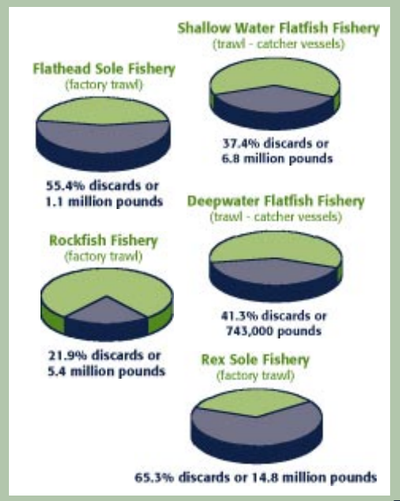


Figure 2. Most Wasteful Fisheries in the Gulf of Alaska (2003)



Ecological Impacts

Photo: J. Ferdinand

DESTRUCTION OF LIVING SEAFLOOR HABITATS

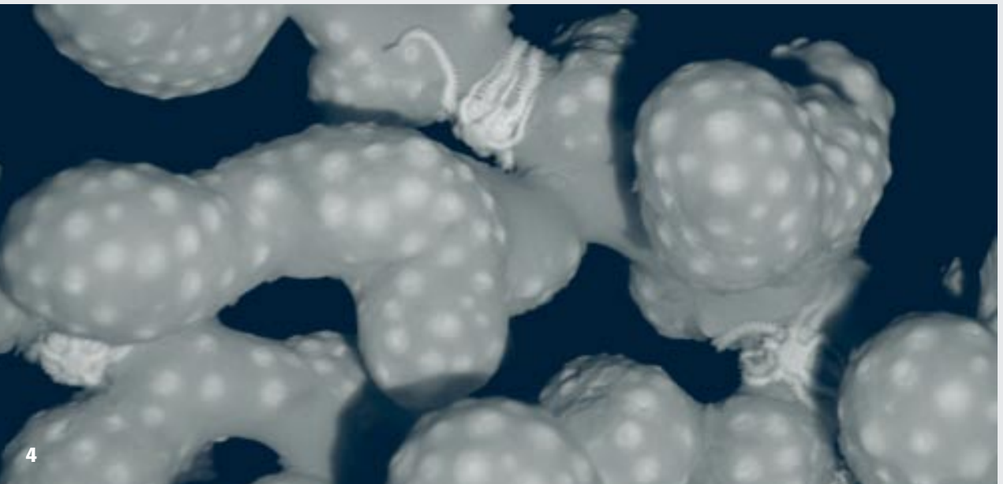
Most fish in the North Pacific are caught using trawl gear. Bottom trawls, laden with chains and equipped with heavy rolling discs, steel doors and airplane tires, are dragged along the seafloor to catch groundfish species such as Atka mackerel, rockfish, cod and flatfishes. This indiscriminate fishing gear effectively catches the target species, as well as most other species in its path.

When bottom trawls are dragged across sensitive seafloor habitats, marine life such as corals, sponges and sea whips are crushed, upended or removed. Some types of cold-water corals are extremely long-lived, surviving for hundreds, perhaps thousands of years. Scientists are beginning to document clear ecological associations between fish, crab and complex coral gardens that provide shelter and nursery grounds (Heifetz 2000, Krieger and Wing 2002).

Observations made off the Aleutian Islands from a manned submersible, suggest that 87% of commercially managed species viewed during research dives were occupying coral and sponge habitat. In addition, virtually 100% of juvenile rockfish were documented in close association with this structurally complex, high relief habitat (Stone 2004). Similarly, research in the Gulf of Alaska near Kodiak, has found that inside areas closed to bottom trawling, there are high-density groves of sea whips. In comparison to adjacent areas open to trawling, these high-density sea whip groves contained 33% more juvenile Tanner crab, plus an increased abundance of gadids (such as pollock and cod) and prey fish (Stone et al. in press).

***Table 2**. Average annual bycatch (pounds) of coral and sponge by region and gear type, 1997-2001 (NMFS 2003a).*

	Bering Sea		Aleutian Islands		Gulf of Alaska	
Gear Type	Coral	Sponge	Coral	Sponge	Coral	Sponge
Bottom Trawl	87,964	500,008	54,675	261,468	11,905	9,921
Longline	2,425	2,205	6,614	10,362	220	220
Pot	220	661	0	2,205	0	2,425
Total	90,609	502,874	61,289	274,035	12,125	12,566



Cold-water corals, like this bubble gum coral, are important habitat to a diversity of fish and crab. Long-lived and slow-growing, these corals are highly sensitive to fishing impacts. Photo: R. Stone, NOAA Fisheries

UNOBSERVED MORTALITY

"Not all that is counted counts and not all that counts can be counted."

- Albert Einstein

Bycatch is monitored and reported to the National Marine Fisheries Service by observers on board fishing vessels. Yet the observed bycatch does not fully represent the total loss of marine life associated with Alaska's commercial fisheries. There is an incomplete record of the nearly 1,000 species of fish and invertebrates taken as bycatch in the North Pacific. This incomplete record is, in part, a result of unobserved mortality. Unobserved mortality includes marine life that is killed but not brought to the surface and marine life that is not documented on vessels because there is inadequate or no observer coverage.

Many fish and other marine life may not actually be caught in fishing gear, yet are still injured or killed. For example, bottom trawl gear rolls over and crushes the living seafloor. This gear retains much of the marine life that it encounters but it also leaves behind damaged organisms on the seafloor that suffer delayed mortality (Krieger 2001, Freese et al.1999). This type of bycatch is not visible from the deck of a fishing boat. The National Marine Fisheries Service recognizes that bycatch actually retained in the net and observed is a minimum estimate of fishing-induced mortality (NMFS 2004).

Another type of unobserved mortality occurs when fish enter into the trawl net, but escape capture by pressing through the mesh of the net. Researchers have found that square mesh nets on trawls help small pollock to escape, but many are injured in the process (Erickson and Pikitch 1999). Studies show that between 47% and 84% of fish that escape through the end of the trawl net die from their injuries, and 47% to 64% of fish that escape through intermediate panels are killed. Experiments have also revealed that juvenile pollock that survive passing through the mesh of a trawl net without injury, still suffer from physical strain and become more susceptible to predation (Ryer 2002).

The fisheries service accounts for both retained catch and discarded groundfish catch against the total allowable catch for the fisheries. Yet they do not factor in estimates for unobserved groundfish mortality. In addition, they do not factor in estimates of unobserved impacts to species that comprise the living seafloor and there are no controls on the amount of these species that can be taken as bycatch.

TINKERING WITH THE MARINE FOOD WEB

There are concerns about the effects of discarded catch on marine food webs. Scientists wonder what is happening to the trophic structure of the food web when large volumes of bycatch are deposited into the water column and onto the seafloor. Are high-volume fisheries altering the marine food web, to favor scavengers over other animals? The authors of Ecological Effects of Fishing (Dayton et al. 2002) report that discarded bycatch can affect the behavior of marine animals by attracting an influx of scavenger species. These species feed on bycatch during seasons of high fishing effort and when fishing stops, these same scavengers then shift their diet to resident species. Millions of pounds of discarded catch likely has some effect on the ecosystem, but the extent of this effect is unknown.

Roller gear (pictured here) and rockhopper gear span the base of bottom trawl nets, allowing the nets to be dragged through and over rough seafloor habitats. Photo: AMCC

Catch inside a trawl net being unloaded onto the deck. Photo: NOAA Fisheries Archives

Rougheye rockfish.
Photo: R. Reuter, NOAA Fisheries

ROCKFISH SPECIES IN ALASKA

Pacific ocean perch
northern
rougheye
shortraker
sharpchin
dark dusky
light dusky
harlequin
red banned
redstripe
yelloweye
black
blue
brown
bocaccio
Puget Sound
dark blotched
greenstriped
pygmy
silvergray
splitnose
stripetail
vermillion
yellowmouth
shortspine thornyhead
longspine thornyhead
canary
China
copper
quillback
rosethorn
tiger
yellowtail
widow

Rockfish Case Study

Wasteful fishing practices are contributing significantly to the over-exploitation of some rockfish species, causing the total catch to exceed acceptable levels. In the Bering Sea and Aleutian Islands region, over half of the rockfish catch is discarded. Furthermore, rockfish are associated with complex high-relief habitats, such as canyon walls with large coral stands. The bycatch of sensitive seafloor species results in a loss of habitat for rockfish.

The complex nature of the many rockfish species in Alaska's waters creates special challenges for fishery management and rockfish conservation. Many rockfish species are long-lived, reproduce slowly and exhibit fidelity to distinct localized habitats at different life stages, such as a pinnacle, boulder field or coral garden (Love et al. 2002). Over time, localized populations of rockfish can become reproductively isolated and genetically distinct from each other. These unique characteristics elevate the risk of overfishing distinct populations either through directed fishing or bycatch.

Of the 34 species of rockfish that live in Alaska's waters, approximately 28 have been documented in the eastern Bering Sea and Aleutian Islands. Some are managed individually but most species are grouped together and managed under a single harvest limit. By lumping unique species into aggregate complexes, managers are treating the different species and populations within the complex as though they are one.

Knowledge about rockfish life histories, new genetic discoveries and emerging information about discrete breeding populations all indicate the need for a more refined management approach. For example, fishery managers assess the populations of rougheye, northern and shortraker rockfish in the Bering Sea and Aleutian Islands separately and then set the allowable catch and overfishing level for the two areas combined. This means that overfishing can occur in one area without exceeding the official overfishing level for the combined region, leaving the appearance of conservative management. By comparing the actual catch to the allowable catch and overfishing levels as assessed for the Bering Sea and Aleutian Islands separately, scientists show that overfishing has occurred for

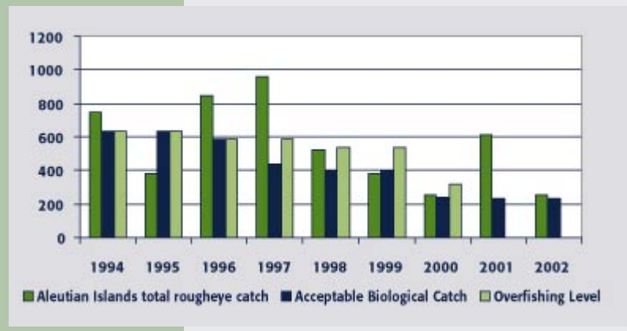


Figure 3. *Catch of rougheye rockfish (metric tons) in the Aleutian Islands compared to the acceptable biological catch and overfishing level (not available for some years) for the Aleutian Islands region. Catch exceeded the acceptable catch seven out of nine years from 1994 to 2002. Because managers have lumped rougheye together with shortraker and managed the Bering Sea and Aleutian Islands as one region, the agency has assumed that overfishing is not occurring. In reality however, overfishing is occurring for the species in the Aleutian Islands region. In 2004 managers split the shortraker/ rougheye complex by species but they did not set separate fishing levels for the Bering Sea and Aleutian Islands (NPFMC 2003a).*

Vessels using longlines have the highest amount of shortraker and rougheye rockfish bycatch in the Bering Sea and Aleutian Islands.
Photo: NOAA Fisheries Archives

populations in both regions, numerous times in recent years (NPFMC 2001).

Rougheye rockfish are of particular concern since the population appears to be in a state of continual decline. The estimated biomass dropped 61% from 26,227 tons in the early 1980s to 10,379 tons in 2004 (figure 4). The long-term decline in rougheye biomass should be a clear warning sign that this rockfish is in trouble.

More than 90% of northern rockfish discards occur in the Atka mackerel trawl fishery. In 2002, 7.2 million pounds of northern rockfish were discarded in the Atka mackerel fishery and 9 million pounds were discarded in 2003. In comparison to all other Bering Sea and Aleutian Islands trawl fisheries, this fishery has the highest amounts of rockfish discards (table 4).

While vessels fishing with trawls accounted for the greatest discards of Pacific ocean perch, sharpchin, northern, and "other rockfish", vessels fishing with longlines had the highest discards of shortraker and rougheye rockfish, totaling 286,000 pounds in 2002 and 104,000 pounds in 2003. In comparison, the cumulative trawl discard of these species was 43,000 pounds in 2002 and 49,000 pounds in 2003.

In 2002, 66% of all longline discards of rougheye and shortraker in the Bering Sea and Aleutian Islands occurred in the sablefish fishery. In 2003, the Pacific cod fishery had the greatest amount of rougheye and shortraker discards, with 47% of the longline discards. Managers need to recognize that minimizing rockfish bycatch and improving the management strategy to better account for their unique life history characteristics can prevent overfishing of sensitive rockfish species.

	Atka mackerel fishery	All trawl fisheries combined	Percent of all 2003 trawl rockfish discards that occurred in the Atka mackerel fishery
Pacific ocean perch	3,867,000	5,813,000	67%
Northern rockfish	9,090,000	9,741,000	93%
Shortraker/ rougheye rockfish	27,000	49,000	55%
"Other" rockfish	317,000	403,000	79%
Total rockfish discards	13,301,000	16,006,000	83%

Table 4. *Comparison of 2003 rockfish discards (lbs) in the Bering Sea / Aleutian Islands Atka mackerel fishery to all Bering Sea/ Aleutian Islands trawl fisheries combined.*

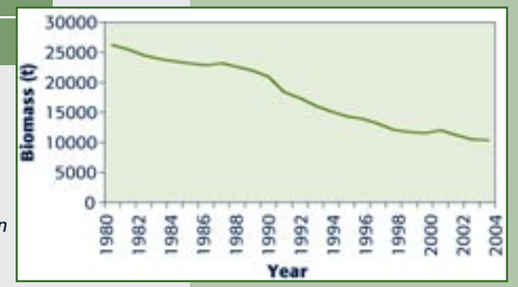


Figure 4. *Estimated biomass of Bering Sea / Aleutian Islands rougheye rockfish (NPFMC 2003a)*

ROCKFISH ELDERS

Rockfish have been called the "elders" of fish society. Some species belonging to the rockfish genera, Sebastes (Greek for "magnificent") can live to be 100 years old. Rougheye rockfish (*Sebastes aleutianus*) have been aged by scientists to 205 years old, making them one of the longest-lived fishes on Earth (Love et al. 2002). There are 32 species of Sebastes and two species in the genus Sebastolobus that live in Alaska's waters (Kramer and O'Connell 1995). Many species do not reach sexual maturity until they are 10 to 15 years old. Additionally, unlike many fish species, these fish don't lay eggs. They are viviparous, meaning that they give birth to live young and nourish their larvae in the ovaries. Different rockfish species occupy a variety of habitats from nearshore kelp forests to deep offshore waters along the continental shelf break. A number of species occupy particular subhabitats within these broader areas and some spend extended periods of time on a specific habitat feature, such as a rocky outcrop, pinnacle or coral garden.

Seabirds congregate around commercial longline vessels to scavenge for food. Many longline fishermen use "streamer lines" designed to deter seabirds from the baited hooks while they set their gear.
Photo: K. Dietrich, NOAA Fisheries

Progress Report

Fishery managers have a number of tools that are commonly used to control bycatch. These include gear restrictions or modifications, closures for bycatch hotspots, year round bottom trawl closures and caps for prohibited species. In the mid-1990s, fishery managers implemented bottom trawl closures in Southeast Alaska, Bristol Bay, around the Pribilof Islands and in the state waters of the Kodiak Island Archipelago with conservation benefits for crab, fish, coral and other seafloor habitats. While these and other bycatch measures have been implemented in the North Pacific, their effectiveness must be continually monitored and necessary adjustments made. Below is a summary of some recent and upcoming decisions, highlights of positive results and disappointments in the struggle to reduce waste in North Pacific fisheries.

SEABIRD BYCATCH – INDUSTRY INITIATIVES

One of the most effective ways to reduce bycatch is for fishermen to initiate clean fishing practices using their experience and ingenuity. Fishermen have modified gear to avoid unwanted catch and formed voluntary reporting groups to notify fishing vessels of bycatch hotspots. One success story is the industry initiative to avoid seabird bycatch in longline fisheries.

Seabirds dive on baited hooks being deployed off the stern of longline vessels. Consequently, they become hooked and drown as the gear is set. In response to the heightened risk of catching endangered short-tailed albatross and an average of approximately 14,000 other seabirds each year, fishermen using longline gear developed streamer lines. The waving red streamers are deployed parallel to the baited hooks, deterring the seabirds from the bait.

After designing and testing the streamer lines, industry members submitted regulatory language to Alaska fishery managers. The first seabird avoidance regulations were implemented in 1997. The regulations require most longline vessels and fisheries to use streamer lines to help reduce and avoid seabird bycatch. In 2002, the total seabird bycatch fell to just over 4,000 birds.

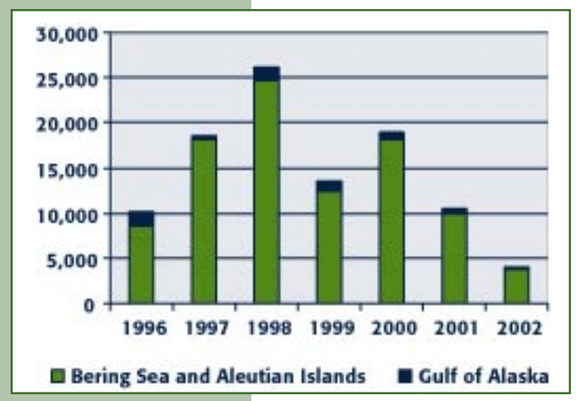


Figure 5. *Annual estimates of seabirds taken in longline fisheries (NPFMC 2003b).*

SALMON BYCATCH

In the Bering Sea, fishery managers have implemented chinook and chum salmon bycatch "savings areas." It was determined that these are areas of especially high salmon bycatch and that savings areas would provide a means to reduce the incidental take of salmon in the Bering Sea pollock fishery. The savings areas close seasonally to pollock trawling if a bycatch cap is reached. Fishery managers also required a gradual reduction in the cap for chinook salmon bycatch.

Despite these control measures, salmon bycatch doubled in 2003. In 2002, Bering Sea trawl fisheries intercepted 37,578 chinook salmon and 78,819 chum and "other" salmon. In 2003, Bering Sea salmon bycatch jumped up to 52,358 chinook and 189,401 chum and "other" salmon. In the Gulf of Alaska groundfish fisheries, salmon is considered a prohibited species but there are no salmon bycatch caps or savings areas. On average, 20,000 chinook salmon and 19,000 chum salmon are incidentally caught each year in the Gulf of Alaska groundfish trawl fisheries.

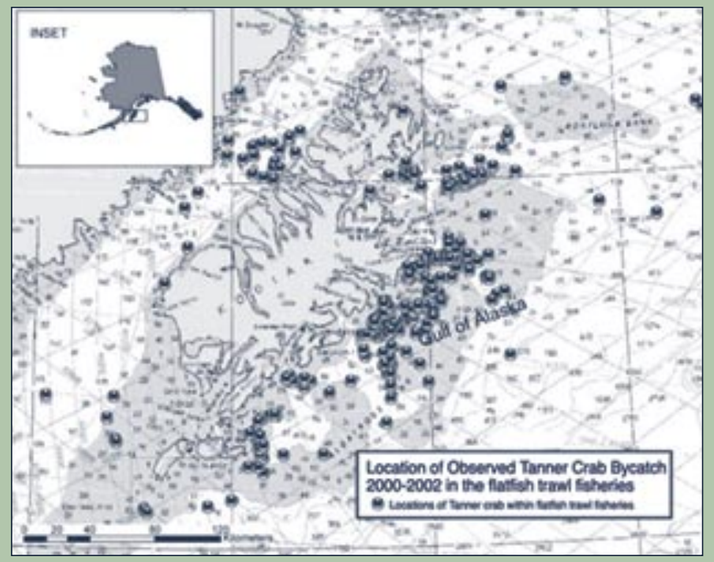
BERING SEA POLLOCK FISHERY

The nation's largest fishery, Bering Sea pollock, lands two to three billion pounds per year by a fleet of large factory trawlers and catcher vessels delivering to shore based processing plants. In 1996, bottom trawls accounted for as little as 2% of the Bering Sea pollock catch, but nearly one-third of the halibut bycatch and one-half of the crab bycatch that occurred in this fishery. By 1999, given that this large fishery could be conducted off the bottom with pelagic trawls, fishery managers banned the use of bottom trawl gear.

Since then, more has come to light about the way pelagic trawls actually work. Although the trawl doors are flown off the bottom in the water column, the chain and cable footrope frequently drag along the seafloor (NRC 2002). Prohibiting bottom trawl gear was an important step in the right direction, but since pelagic trawls still contact the bottom, their impacts to seafloor habitats need to be addressed. This can be remedied by monitoring the gear to ensure it truly operates without seafloor contact.

The program that most significantly reduced discards in the pollock fishery was the 1998 requirement that vessels retain and utilize all pollock and cod caught, including juvenile fish, which in 1997 comprised 46% of the total Bering Sea bycatch (FIS & Pacific Associates 1998). While the improvement is statistically impressive, it is not entirely clear if this program has reduced waste by now retaining fish that used to be discarded, or if the fleet is actually avoiding catching unwanted fish. For those vessels using square mesh trawl nets, potentially high unobserved mortality remains a serious concern (see page 5).

Pollock accounts for 70% of all the groundfish harvested in the North Pacific. Although this high volume fishery has a low percentage of bycatch, concerns about salmon bycatch, unobserved mortality, and gear contact with the seafloor remain an issue in this fishery.
Photo: B. Hallinen, Anchorage Daily News



GULF OF ALASKA GROUNDFISH QUOTAS

Fishery managers are developing a new Gulf of Alaska groundfish plan to allocate individual quotas to participating fishermen. While the program offers some new ways to reduce bycatch, it is designed to substantially increase the amount of flatfish taken with bottom trawls. Increased trawling will intensify habitat impacts and put added pressure on depleted crab populations. To prevent this from happening, fishery managers can establish bycatch limits, improve bycatch monitoring and design closures to protect areas of special biological importance. Conservation measures are essential to ensuring that the quota program addresses community concerns about crab restoration and legal obligations to reduce and avoid bycatch.

BERING SEA FLATFISH

In 2003 the Bering Sea bottom trawl fleet targeting flatfish such as yellowfin sole and rock sole discarded about 30% of their catch. Some individual vessels had bycatch rates of up to 50%. Although various plans have been attempted to address this excessive waste, implementation has been extremely slow.

In 1998 the North Pacific Fishery Management Council adopted regulations requiring the Bering Sea and Aleutian Islands groundfish vessels to retain and utilize all yellowfin sole and rock sole. The intent was to create an incentive for the fleet to fish more selectively, avoiding unwanted catch and minimizing waste. Vessels had until 2003 to develop markets for the millions of pounds of wasted fish. In 2002 however, the industry requested more time to comply with the regulations and to develop a new plan. The regulations requiring full retention were then waived.

Recently, fishery managers approved a "minimum groundfish retention standard" for Bering Sea factory trawlers greater than 125 feet in length. Beginning in 2005, these trawlers will be required to retain 65% of their groundfish catch and this standard will increase to 85% over a four-year period. But will a reduced bycatch rate result in a lower amount of fish discarded? To be a conservation success, the result must be more selective fishing practices to avoid unwanted catch and a reduction in the total amount of waste.

Flatfish trawlers discard up to 65% of their catch. High volumes and rates of discards in many flatfish fisheries is a longstanding problem for which regulatory solutions have been delayed for many years.
Photo: NOAA Fisheries Archives

OBSERVER PROGRAM

Central to reducing bycatch is accurate data collection by independent observers on board fishing vessels. In 2003, the National Marine Fisheries Service outlined a national bycatch strategy including recommended improvements in the observer programs (NMFS 2003b). The national strategy is to increase the precision of bycatch estimates, employ standardized reporting procedures, increase observer coverage, and develop useful technologies such as digital observation systems. The North Pacific region is working on renovating the existing observer program to better monitor catch across all fleets and fisheries.

A fishery observer measures the volume of fish in a trawl net.
Photo: B. Fedorko

THE OBSERVER EFFECT

Accurate observer data is a critical component of Alaska fisheries management.

However, there are some fishermen that change their fishing practices when they have an observer on board, intentionally skewing the data that is collected. In one instance, the F/V Rebecca Irene, a Bering Sea factory trawler, was fined for dumping halibut bycatch before an observer could document it. When asked why this was done, the skipper testified, "It all came down to money, how much money we were putting in the coffer" (NOAA Docket No. AK 01-5112). The flatfish trawl fishery closes once the halibut bycatch cap is reached, but by making sure the bycatch was not recorded, the fishery stayed open longer.

The talk on the dock is that this is not an isolated case. Changing fishing practices while an observer is on board, whether it is presorting bycatch or altering fishing schedules so that observers do not see the dirty sets, is thought to be a problem among some fishing vessels. Ultimately, this behavior negatively affects the resource because managers do not have fishery data that accurately represents what is happening on the water.

MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT (MSA)

The MSA is the principal legislation governing fisheries in federal waters and sets explicit standards to minimize bycatch, prevent overfishing, protect habitat and, within conservation constraints, provide for the sustained participation in fisheries by coastal communities. National Standard 9 of the MSA requires that "conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch." 16 U.S.C. §1851(a)(9)

What We Can Do To Minimize Bycatch

People throughout Alaska are concerned about the impacts of bycatch on the economies of our coastal communities and the health of the marine ecosystem. There are ways we can work together to promote clean fishing practices.

CONSERVATION GUIDELINES FOR BYCATCH REDUCTION

Fishery management measures to reduce bycatch must meet the following guidelines in order to achieve conservation goals:

- Measures to minimize bycatch must result in avoidance of all categories of bycatch including species that are ecologically important but have no commercial value.
- Measures to minimize bycatch must result in lowering the total amount of marine life removed from the ocean ecosystem. This means not only lowering bycatch rates, but also lowering total bycatch volume.
- Measures with the greatest potential for success apply positive incentives that offer economic rewards for conservation.
- Measures to minimize bycatch must be integrated with an improved observer program to ensure a high level of integrity in data collection and compliance monitoring by fishery managers.

IDEAS FOR EFFECTIVE BYCATCH REDUCTION MEASURES

- Renovate the observer program to improve catch data and to achieve greater accountability.
- Reduce caps for allowable bycatch of halibut, salmon, herring and crab.
- Set caps and establish savings areas for those fisheries and areas that do not already have caps for prohibited species.
- Restrict indiscriminate fishing gear in biologically sensitive habitats.
- Increase fishery allocations to cleaner gear types.

Cold-water corals and a basket star (pictured here) are part of the diverse living seafloor. Corals and sponges create habitat in the deep waters off the Aleutian Islands.
Photo: R. Reuter, NOAA Fisheries

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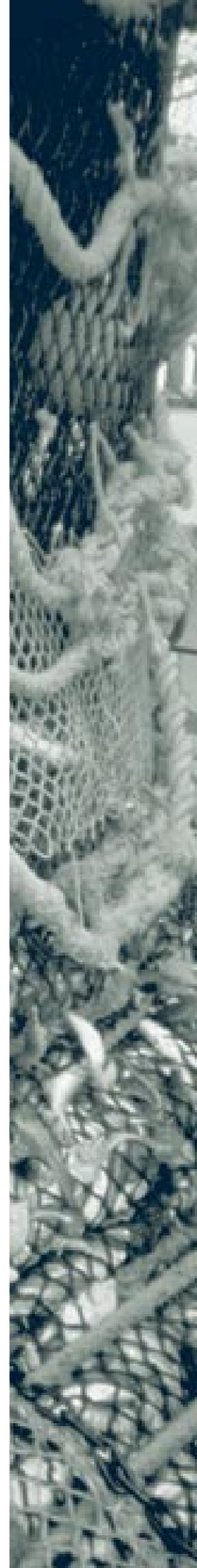

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